805 KAR 1:020. Protection of fresh water zones.

RELATES TO: KRS 353.520

STATUTORY AUTHORITY: KRS Chapter 13A, 353.540, 353.550, 353.560

NECESSITY, FUNCTION, AND CONFORMITY: KRS 353.540 authorizes the Department for Natural Resources to administer and enforce the provisions of KRS 353.500 to 353.720. The waste of oil and gas is prohibited by KRS 353.520. It is the purpose of this administrative regulation to protect fresh water zones from contamination associated with the production of oil and gas. KRS 353.550 provides that the department shall have the authority to set forth the requirements for casing, operation and plugging of wells to prevent escape of oil or gas, the detrimental intrusion of water, blowouts, cave-ins, seepages and fires.

Section 1. Definitions. The definitions contained in KRS 353.510 and the following additional definitions shall apply to this administrative regulation:

(1) "Abnormal pressure" means a reservoir pressure that exceeds the hydrostatic pressure of fresh water extending from the reservoir to the surface.

(2) "Annulus" means the space between two (2) strings of casing or between a string of casing and the bore hole wall.

(3) "Casing (casing string)" means steel tubes or pipes installed in a well.

(4) "Surface casing" means the first and largest diameter casing installed in a well and its primary uses are to make the bore hole stand up and to protect the fresh water zones.

(5) "Intermediate casing" means one or more strings of pipes installed in a well in addition to the surface casing in which each string is smaller in diameter than the previous.

(6) "Long casing string" means the last casing installed in a well to be used for production or injection purposes.

(7) "Zone" means a layer of strata capable of producing or receiving fluids.

Section 2. Protection of Fresh Water Zones for Drilling and/or Plugging Operations. (1) During drilling operations, one (1) of the following methods shall be used to protect fresh water zones:

(a) Method A. Casing shall be set on a casing shoulder and said casing shall have a shoe installed on the bottom of the bottom joint. Upon the completion of the drilling program, all the recoverable casing must be removed or cemented to the surface.

(b) Method B. Casing shall be set on a shoulder and cemented sufficiently to cover 100 feet including the shoe. Upon completion of the drilling, all of the recoverable casing must be removed or cemented to the surface.

(c) Method C. A top to bottom drilling mud system with a filtrate water loss of less than ten (10) cubic centimeters, as determined by American Petroleum Institute standards, in its publication "Standard Procedures for Field Testing Water Based Drilling Fluids" API RP 13B-1, Sections 1, 2 and 3, June 1, 1990, filed and incorporated herein by reference. Copies may be obtained from the Department for Natural Resources, P. O. Box 14090, Lexington, Kentucky 40512-4090. Certification of filtrate water loss must be made by the operator.

(2) In the event a well is to be plugged, then it shall be plugged in the manner prescribed by 805 KAR 1:060 or 805 KAR 1:070.

Section 3. Protection of Fresh Water Zones. Any well drilled in the Commonwealth of Kentucky subject to the jurisdiction of the Department for Natural Resources subsequent to the effective date of this administrative regulation shall be equipped with the following fresh water protection prior to production or injection.

(1) A protective string of casing, be it surface, intermediate, or long string, shall extend thirty (30)

feet below the deepest known fresh water zone. Such protective string shall have cement circulated in the annular space outside said casing of a sufficient volume of cement, calculated using approved engineering methods, to assure the return of the cement to the surface. In the event cement does not return to the surface, every reasonable attempt will be made to fill the annular spaces by introducing cement from the surface. If the intermediate casing or long casing string is:

(a) Cemented to the surface; or

(b) Cemented thirty (30) feet into the next larger string of cemented casing in conformity with prescribed procedure, the string or combination of strings shall be considered as the fresh water protection.

(2) In areas where abnormal pressures are expected or encountered, the surface and/or intermediate casing string shall be anchored in sufficient cement, at a sufficient depth to contain said pressures, and blowout prevention valves and related equipment shall be installed.

Section 4. Wells Used for Injection of Fluids. (1) The injection of fluids shall be accomplished through a tubing and packer arrangement with the packer set immediately above the injection zone, and the annulus between the tubing and casing shall be monitored by pressure sensitive devices. The injection pressure shall be regulated to minimize the possibility of fracturing the confining strata. Upon application, and after notice and hearing, a variance from this requirement may be granted by the director, upon a showing by an individual operator that alternate prudent engineering practices shall result in fresh water protection. The following are exempted from the requirements of this section:

(a) Injection of fluids for the purpose of well stimulation; and

(b) Injection of gas for the purpose of storage.

(2) Before injecting fluids into a well not previously permitted for injection purposes, the operator shall make application to the department for an injection permit for said well. The application for a permit to drill, deepen or convert a well for the purpose of injection of fluids shall include:

(a) A statement by the operator as to whether the well is to be used for pressure maintenance, secondary recovery, tertiary recovery, gas storage or for disposal purposes;

(b) The approximate depths of the known fresh water zones; and

(c) A plat showing:

1. The names of all lessees and lessors contiguous to the tract on which the injection shall occur;

2. The Carter Coordinate location and the elevation of the well site;

3. The geologic name and depth of the injection zone;

4. At least two (2) surface features, by bearing and distance from the proposed well site, which appear on the U.S.G.S. seven and one-half (7 1/2) minute topographic map of the area;

5. The name of said topographic map and county;

6. The location of all known fresh water wells within a radius of 1,000 feet of the proposed injection well site;

7. The location and completion and/or plugging record of all wells whether producing or plugged, within a radius of 1,000 feet of the proposed injection well site.

(3) Prior to injection into any well, the operator shall furnish the department with a certificate indicating that all requirements of this administrative regulation have been met. The certificate shall include the following:

(a) The identification of said well by permit number, operator's name, lease name, well number, Carter Coordinate location, elevation and county;

(b) The entire casing and cementing record, any packers and other special down hole equipment, and cement bond logs, if run;

(c) The anticipated maximum bottom hole pressure (psi) and volume in barrels or cubic feet, per day;

(d) The identification of the injection zone by geological name and depth (top and bottom of zone), the number of perforations if applicable, or the interval of open hole; and

(e) Certification by the operator that the mechanical integrity of the well has been tested.

Section 5. Exemptions for Preexisting Wells. Any injection well in existence prior to the effective date of this administrative regulation shall be exempt from the requirements of this administrative regulation until such time as in the opinion of the department, said well is leaking fluids to other zones, or to the surface; provided, however, that this exemption shall not apply unless within one (1) year from the effective date of this administrative regulation, the operator files an area plat, or plats, showing all of such operator's injection and associated production wells.

Section 6. Recordkeeping. The operator of an injection project shall monitor injection pressures and volumes at least monthly, and shall keep said records on file in his place of business for the life of the project; plus five (5) years. The director may require more frequent monitoring, if in his opinion, good reason therefor exists. (4 Ky.R. 632; Am. 5 Ky.R. 112; eff. 8-2-78; 18 Ky.R. 187; 1020; eff. 9-25-91; TAm eff. 8-9-2007.)